## REMARKS

This is a full and timely response to the outstanding non-final Office Action

mailed March 27, 2007.  The Examiner is thanked for the thorough examination of the

present application.  Upon entry of this response, claims 1-26 are pending in the

present application.  Applicant respectfully requests consideration of the following

remarks contained herein.  Reconsideration and allowance of the application and

presently pending claims are respectfully requested.


**I.      Objections to the Specification**

On page 2, the Office Action raises various objections to the specification.  In

response, Applicant has amended the specification and removed reference numeral

"700."  Furthermore, Applicant has amended the specification, as indicated above, to

correct the typographical error.  Accordingly, Applicant respectfully requests that the

objections to the specification be withdrawn.


**II.     Response to Claim Rejections Under 35 U.S.C. § 102**

Claims 1 and 14 are rejected under 35 U.S.C. §102(b) as allegedly being

anticipated by *Iverson et al.* (U.S. Pat. No. 6,052,379, hereinafter "*Iverson*").  For at

least the reasons set forth below, Applicant traverses these rejections.


***Independent Claim 1***

Claim 1 recites:

>       1. A method for allocating a shared resource among a plurality of
> devices, the method comprising the steps of:
>            ***associating a bucket to each one of the plurality of devices***

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*wherein the plurality of devices share a shared resource*;
     *assigning a fill rate to each bucket where each bucket accrues a predetermined number of credits for each time period the associated device is stalled*;
     *assigning a drain rate to each bucket where each bucket drains a predetermined number of credits for each time period the associated device is granted access to the shared resource*;
     comparing each bucket to determine a grant bucket having the most number of credits at a specific time; and
     granting access to the shared resource to the device associated with the grant bucket.

(*Emphasis added*). Claim 1 patently defines over the cited art for at least the reason that the cited art fails to disclose the features emphasized above.

Applicant respectfully submits that independent claim 1 patently defines over *Iverson* for at least the reason that *Iverson* fails to disclose, teach or suggest certain features in claim 1. While the Office Action asserts on page 2 that "*Iverson et al.* clearly show and disclose a method for allocating a shared resource among a plurality of devices," Applicant submits that *Iverson* does not teach each and every element in claim 1. In fact, Applicant respectfully submits that the "leaky bucket" mechanism disclosed in *Iverson* is quite different from the embodiments of claim 1.

First, *Iverson* fails to disclose the feature of "associating a bucket to each one of the plurality of devices wherein the plurality of devices share a shared resource." The Office Action points to FIG. 10 in the *Iverson* reference and appears to allege that the leaky bucket priority scheme (utilized to assign priority within a high or low priority band) is equivalent to this feature. Applicant respectfully disagrees as *Iverson* fails to teach of associating a bucket to each of a plurality of devices where the devices share a shared resource. FIG. 10 shows two buckets – the Csum bucket 402 and the Esum bucket 404. (Col. 17, lines 42-43). The individual buckets (402, 404), however, are not

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associated to each one of a plurality of devices.  The function of each bucket is

described in the following text passages of *Iverson*:

**(First Bucket 402)**
> The committed burst bandwidth credit ($B_c$) dimension of the first bucket 402 represents the amount of bandwidth that a User may transmit in a burst, potentially above the CIR, and expect reliable delivery to the network. The water level of the first bucket (BpCSum) represents the amount of bandwidth accumulated by the user above the CIR rate up to the maximum provisioned for the user ($B_c$).

(Col. 17, lines 43-50).

**(Second Bucket 404)**
> BpEsum is the water level value in the second bucket 404 and represents the current accumulated value of unused bandwidth in excess of CIR+$B_c$ (i.e. past overflows from the first bucket 402). The ESum bucket 404 represents a cache of excess bandwidth that the user 62 can save up to be used for longer periods of high transmission demand.
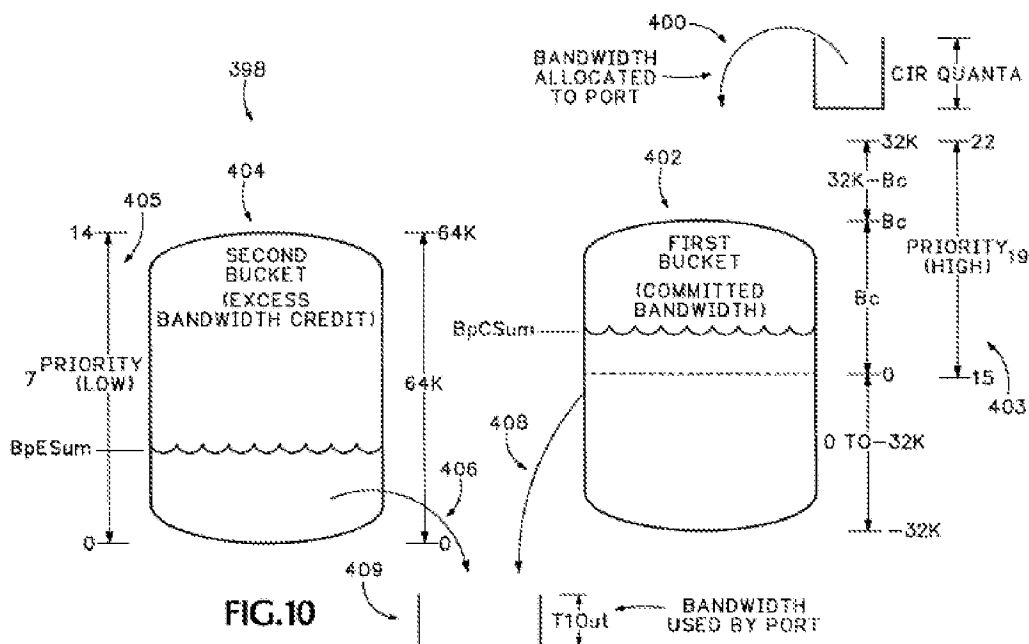
(Col. 17, line 66 to Co. 18, line 4).

**(Relationship Between First and Second Buckets 402, 404)**
> Every measurement interval the quantum of bits 400 are added to the first bucket 402. Any overflow of bandwidth above the limit of the first bucket 402 is added to the ESum bucket 404.

(Col. 18, lines 5-8).

*Iverson* describes a priority assignment scheme based on the current water level of

buckets 402 and 404.  *Iverson* does not teach of bucket 402 being associated with one

device and bucket 404 being associated with another device.  In fact, the buckets 402,

404 are used in conjunction with each other in the leaky bucket scheme ("If the first

bucket is full or has less than the CIR quanta remaining before becoming full, the

overflow is added to the second bucket 404 in step 414." Col. 19, lines 4-7.)  Thus,

Applicant respectfully submits that *Iverson* fails to disclose the limitation, "associating a

bucket to each one of the plurality of devices wherein the plurality of devices share a shared resource."

At most, *Iverson* teaches of incorporating the leaky bucket scheme for each of the plurality of ports/users 62 shown in FIG. 3 of the *Iverson* reference. Even assuming, *arguendo*, that this is what the Examiner was referring to, *Iverson* still fails to disclose "assigning a fill rate to each bucket." At most, *Iverson* discloses that the "quantum of bits 400 represents the bandwidth committed by the CIR to be available to the User 62 (FIG. 3) for the evaluation time interval. Ports referred to below are shown in FIG. 3 as users 62." (Col. 17, lines 28-31). Thus, the quantum of bits 400 appears to be associated with all the ports 62 shown in FIG. 3. ("quantum of bits 400 represents the bandwidth committed by the CIR to be available to the User 62" and "Ports referred to below are shown in FIG. 3 as users 62"). *Iverson* does not appear to disclose "assigning a fill rate to each bucket."

*Iverson* also fails to disclose "assigning a drain rate to each bucket." Applicant refers to arrows 406 and 408 in FIG. 10 of the *Iverson* reference:



FIG.10

Applicant also refers to the following text in the *Iverson* reference:

> In this case, <u>the bandwidth is then taken from the second bucket 404</u>, representing accumulated unused excess bandwidth, until the level, BpESum, <u>is reduced to zero as noted by arrow 406</u>.
> If the priority is above the midpoint of the total priority range, <u>the bandwidth is taken from the first bucket 402, as noted in arrow 408</u>, so the port first uses up it's committed burst bandwidth allocation ($B_c$).

(Col. 18, lines 38-45). While *Iverson* teaches of taking bandwidth from the first and second buckets (402, 404), Applicant submits that this is not equivalent to the limitation, "assigning a drain rate to each bucket."

Furthermore, Applicant would like to note that *Iverson* fails to disclose the limitation: "where each bucket <u>accrues</u> a predetermined number of credits <u>for each time period the associated device is stalled</u>." *Iverson* also fails to disclose the limitation: "where each bucket <u>drains</u> a predetermined number of credits <u>for each time period the associated device is granted access to the shared resource</u>." That is, *Iverson* does not appear to teach of either bucket 402 or bucket 400 accruing a predetermined number of credits "for each time period the associated device <u>is stalled</u>." Nor does *Iverson* teach of either bucket 402 or bucket 400 draining a predetermined number of credits "for each time period the associated device <u>is granted access to the shared resource</u>."

Accordingly, Applicant respectfully submits that independent claim 1 patently defines over *Iverson* for at least the reason that *Iverson* fails to disclose, teach or suggest the highlighted features in claim 1 above.

### *Dependent Claims 2-13*

Applicant submits that dependent claims 2-13 are allowable for at least the

reason that these claims depend from an allowable independent claim. *See, e.g., In re*

*Fine*, 837 F. 2d 1071 (Fed. Cir. 1988).

### *Independent Claim 14*

Claim 14 recites:

> 14. A system for allocating a shared resource among a plurality of
> devices, the system comprising:
> **an association module for associating a bucket to each one of**
> **the plurality of devices wherein the plurality of devices share a**
> **shared resource**;
> **a fill rate module for assigning a fill rate to each bucket where**
> **each bucket accrues a predetermined number of credits for each**
> **time period the associated device is stalled**;
> **a drain rate module for assigning a drain rate to each bucket**
> **where each bucket drains a predetermined number of credits for**
> **each time period the associated device is granted access to the**
> **shared resource**;
> **a grant determination module for comparing each bucket to**
> **determine a grant bucket having the most number of credits at a**
> **specific time**; and
> a grant access module for granting access to the shared resource
> to the device associated with the grant bucket.

(*Emphasis added*). Claim 14 patently defines over the cited art for at least the reason

that the cited art fails to disclose the features emphasized above.

Applicant respectfully submits that *Iverson* fails to disclose each and every

element recited in claim 14 above. As discussed in depth above, Applicant submits that

*Iverson* fails to teach the feature of "associating a bucket to each one of the plurality of

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devices wherein the plurality of devices share a shared resource." On page 4, the

Office Action again refers to the leaky bucket mechanism in FIG. 10, which illustrates

two buckets – the Csum bucket 402 and the Esum bucket 404. (Col. 17, lines 42-43).

However, bucket 402 and bucket 404 are not associated to each one of the plurality of

devices. In fact, the buckets 402, 404 are used in conjunction with each other in the

leaky bucket scheme ("If the first bucket is full or has less than the CIR quanta

remaining before becoming full, the overflow is added to the second bucket 404 in step

414." Col. 19, lines 4-7.)

As discussed above, at most, *Iverson* teaches of incorporating the leaky bucket

scheme for each of the plurality of ports/users 62 shown in FIG. 3 of the *Iverson*

reference. Even assuming, *arguendo*, that the Examiner was referring to the plurality of

users 62, *Iverson* still fails to disclose "assigning a fill rate to each bucket" and

"assigning a drain rate to each bucket." At most, *Iverson* discloses that the "quantum of

bits 400 represents the bandwidth committed by the CIR to be available to the User 62

(FIG. 3) for the evaluation time interval. Ports referred to below are shown in FIG. 3 as

users 62." (Col. 17, lines 28-31). Thus, the quantum of bits 400 appears to be

associated with all the ports 62 shown in FIG. 3. ("quantum of bits 400 represents the

bandwidth committed by the CIR to be available to the User 62" and "Ports referred to

below are shown in FIG. 3 as users 62"). *Iverson* does not appear to disclose

"assigning a fill rate to each bucket." As discussed above, *Iverson* also fails to teach the

limitation, "assigning a drain rate to each bucket." While *Iverson* teaches of taking

bandwidth from the first and second buckets (402, 404), Applicant submits that this is

not equivalent to "assigning a drain rate to each bucket."

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Furthermore, Applicant would like to note that *Iverson* fails to disclose the limitation: "where each bucket <u>accrues</u> a predetermined number of credits <u>for each time period the associated device is stalled</u>." *Iverson* also fails to disclose the limitation: "where each bucket <u>drains</u> a predetermined number of credits <u>for each time period the associated device is granted access to the shared resource</u>." That is, *Iverson* does not appear to teach of either bucket 402 or bucket 400 accruing a predetermined number of credits "for each time period the associated device <u>is stalled</u>." Nor does *Iverson* teach of either bucket 402 or bucket 400 draining a predetermined number of credits "for each time period the associated device <u>is granted access to the shared resource</u>."

Accordingly, Applicant respectfully submits that independent claim 14 patently defines over *Iverson* for at least the reason that *Iverson* fails to disclose, teach or suggest the highlighted features in claim 14 above.

### *Dependent Claims 15-26*

Applicant submits that dependent claims 15-26 are allowable for at least the reason that these claims depend from an allowable independent claim. *See, e.g., In re Fine*, 837 F. 2d 1071 (Fed. Cir. 1988).

## CONCLUSION

Applicant respectfully submits that all pending claims are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephone conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

No fee is believed to be due in connection with this amendment and response to Office Action. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 50-0835.

Respectfully submitted,

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